

**ICPE 2018**  
**International Conference on Psychology and Education**

**RELATIONSHIP BETWEEN THE CLASSROOM QUALITY AND  
LANGUAGE DEVELOPMENT: THEORETICAL REVIEW**

M.N. Martynenko (a)\*, A.N. Veraksa (b), D.A. Bukhalenkova (c), K.S. Tarasova (d)

\*Corresponding author

(a) Faculty of Psychology, Lomonosov Moscow State University, Moscow, Russia,  
margaret.martynenko@gmail.com

(b) Faculty of Psychology, Lomonosov Moscow State University, Moscow, Russia, veraksa@yandex.ru

(c) Faculty of Psychology, Lomonosov Moscow State University, Moscow, Russia, d.bukhalenkova@inbox.ru

(d) Faculty of Psychology, Lomonosov Moscow State University, Moscow, Russia, christinap@bk.ru

***Abstract***

The article presents a review aimed at studying the relationship between the process quality of the educational environment and the indicators of preschool language development. By process quality is understood the quality of the processes of teacher-child interaction in kindergarten groups (the CLASS™ assessment). The review considers correlation and longitudinal studies. The analysis and systematization of research results is carried out separately for the CLASS™ domains: Instructional Support, Emotional Support and Classroom Organization, which correspond to the emotional, instructional and organizational aspects of teacher-child interactions. The results of the studies testify to the existence of a stable connection between the organizational features of teacher-child interactions and their results of language development. The high level of consistency in the research results testifies to the effectiveness of the method used to assess the process quality of the educational environment - the Classroom Assessment Scoring System (CLASS™) and the significant effect of process quality on preschool language development. This review can be useful for researchers of the quality of preschool education, since it presents systematic results of studies and information on the effectiveness of methods used in them.

© 2018 Published by Future Academy [www.FutureAcademy.org.UK](http://www.FutureAcademy.org.UK)

**Keywords:** CLASS, Emotional Support, Instructional Support, Classroom Organization, preschool age, language development. .



## **1. Introduction**

The issues of educational quality have acquired the independent status (Peisner-Feinberg, et al., 2001; Burchinal, et al., 2009). A separate group of studies is aimed at assessing the relationship between the quality of the educational environment and preschool language development. The researchers' interest in this connection is due to the importance of language development in the formation of thinking, regulatory functions and in the formation of children's school readiness in terms of psychology. A number of studies have shown that understanding language and the syntactic structure of sentences in the future is a powerful predictor of children's school performance (Catts, et al., 2006; NICHD, et al., 2005). Mastering the symbolic aspect of language in the kindergarten forms the child's initial reading skills, which in the future will serve as a support in mastering the educational material until the end of the primary school..

## **2. Problem Statement**

In modern studies, structural and process components of the quality of the educational environment are distinguished. Structural quality is assessed through indicators that are easily quantifiable (the number of children and teachers in one group, the level of professional education and teaching experience). The process quality is more difficult to assess since it includes the characteristics of teacher-child interaction. process quality characteristics are based on key concepts of leading theories of age psychology. Among them, special attention is given to the dynamics of interpersonal relationships in attachment theory (Bowlby, 1969); the aggregate of hierarchical subsystems in the theory of ecological systems (Bronfenbrenner, 1986) and the role of communication in children's mental development, considered in the framework of the cultural-historical approach (Vygotsky, 1978).

In this paper, we focused on the process component of the quality of the educational environment as a factor in language development, since a number of studies indicate a high value of the characteristics of the child's communication with an adult in language development (Vasilyeva, et al., 2011; Justice, et al., 2011). The relevance of the review is achieved by an analysis carried out for the first time and by the systematization of disparate research results in this field.

## **3. Research Questions**

- Does teacher-child interaction quality affect significantly on children's language development?
- Does the size of the effect vary depending on family well-being and the cultural characteristics of children?

## **4. Purpose of the Study**

The purpose of the study is to analyze the connection of the process quality of the educational environment with the indicators of language development in preschool children.

## **5. Research Methods**

### **5.1. Search strategy and selection of studies**

The review includes studies of the relationship between the process quality of the educational environment and the indicators of language development in preschool children, published in the period from 2010 to 2018. The survey did not include studies of groups, where ten children accounted for three and more teachers.

To search for articles relevant academic journals were studied (Early Childhood Research Quarterly; Early Childhood Research and Practice; Contemporary Issues in Early Childhood; Child Development etc.). Full-text versions of studies were searched using electronic databases (Web of Science; eLibrary). A total of 30 studies were found, but only 23 of them were met by the above criteria.

### **5.2. Sample characteristics**

The survey includes studies involving kindergarteners, age 3 to 7 from different countries (Australia, UK, China, Portugal, USA, Finland, Sweden).

### **5.3. Assessment methods for language development**

To assess phonemic hearing and speech understanding, the researchers applied to the Test of Preschool Early Literacy (Lonigan, et al., 2007), Phonological Awareness and Literacy and phonemic hearing development assessment (Torppa, et al., 2007). The vocabulary was assessed using the Peabody Picture Vocabulary Test (Dunn & Dunn., 1997), as well as The Picture Vocabulary subtest of the Woodcock–Johnson (Woodcock, et al., 2001). The children’s writing knowledge was assessed using the Preschool Word and Print Awareness (Justice, et al., 2011). The assessment of children's understanding of expressive speech was made using The Oral and Written Language Scale (Carrow-Woolfolk, 1995). Letter and number recognition was assessed using WJ– III (Woodcock, et al., 2001).

### **5.4. Techniques of Quality Assessment of Educational Environment**

In our studies Classroom Assessment Scoring System (Pianta, et al., 2008) was used for the quality assessment of teacher-child interaction. CLASS™ allows assessing the interaction processes in the kindergarten group on three domains: Emotional support, Classroom Organization, and Instructional support.

## **6. Findings**

Longitudinal studies allow for a long time to trace the characteristics of the mental development of kindergarteners with different characteristics of the quality of the educational environment. The main advantage of the longitudinal method is the possibility of analyzing the individual and group dynamics of the development of kindergarteners for a long period of time with different levels of process quality of the educational environment. Hatfield B. notes that this type of studies refers to a natural experiment in which the process quality of the educational environment is an experimental effect (Hatfield, et al., 2016).

One of the biggest longitude studies - The Head Start Family and Child Experiences Survey (FACES) was launched in the autumn of 2006 by the group of researchers in the USA (Aikens, et al., 2012).

The sampling included 3315 children (ages 3 to 4). The children underwent psychological testing twice: when they entered kindergarten and after the year of attending. Passive vocabulary was assessed using PPVT-4. Letter knowledge was assessed using Woodcock-Johnson. To assess the quality of interaction processes the Instructional Support domain (CLASS™) was used. A connection was found between the quality level of the instructional support provided by the teacher and the enhancement of children's vocabulary for the academic year. Children in high performing groups had more significant vocabulary growth than children of low-scored groups. Researchers note the absence of differences in children's letter knowledge between high-scored and low-scored groups (the Instructional Support domain).

The research team led by Guo Y. analyzed the relationship between the quality of the interaction processes in the group and the indicators of children's language development (Guo, et al., 2010). The sampling included 328 children (ages 3 to 5). Children's vocabulary skills, recognition of functions and types of writing, phonemic hearing and letter knowledge were assessed. The study showed that Emotional Support and Instructional Support is a statistically significant predictor of increasing vocabulary and developing writing skills. Children, who attended high-scored kindergarten groups showed higher results in the final diagnostics. The purpose of Guo Y.'s later longitudinal project was to analyze the contribution of two factors into children's vocabulary development: the process quality of the educational development and the age composition of the kindergarten group (Guo, et al., 2014). The sampling included 130 children (ages 3 to 6). Their vocabulary was assessed at the beginning and at the end of the school year. The study showed that a high score in the Classroom Organization domain is a statistically significant predictor of the formation of children's richer vocabulary. The relationship between the vocabulary the age composition of the group was not found. The study implemented under the leadership of Burchinal M., was aimed at analyzing the developmental features of children attending groups with different levels of the process quality of the educational environment (Burchinal, et al., 2010). The sampling included 1129 children, ages 3 to 4. At the beginning and at the end of the school year the children's vocabulary, children's understanding of expressive speech and letter knowledge were assessed. As a result, the relationship between the Instructional Support domain with letter knowledge and the development of children's expressive speech was found. The Emotional Support domain was not significantly associated with children's success in language development and the initial reading skills.

Dotterer A. and colleagues analyzed how the quality of the emotional and instructional support provides influences on school readiness (Dotterer, et al., 2013). The sampling included 3584 children, average age is 4 years old. At the beginning and at the end of the school year the children's vocabulary, children's understanding of expressive speech, phonemic hearing and letter knowledge were assessed. The quality of emotional support did not have a statistically significant impact on the development of children's expressive speech, letter knowledge and vocabulary. At the same time the quality of the instructional support became a powerful predictor of increasing children's vocabulary and the development of expressive speech.

The same research was carried out by Howes and his colleagues (Howes, et al., 2008). 2800 children (ages 3 to 4) took part in this research. Such school readiness indicators were recorded as the ability to understand speech and letter knowledge, vocabulary and speech perception. The study showed that pupils from groups, in which discussion methods were implemented, have a more extensive vocabulary and are

able to name a larger number of letters compared to children from those groups where the teacher rarely organized group discussions.

Mashburn J. and his colleagues wanted to define the value of the quality of teacher-child interaction for language development (Mashburn, et al., 2008). 2439 children (ages 4) took part in this research. The Emotional Support and Instructional Support domains were used for the assessment of interaction quality. At the beginning and at the end of the school year the children were examined using standardized psychological tests, aimed at vocabulary assessment, speech perception and understanding letter/number knowledge. The researchers found out, that kindergarteners with high scores according to the Instructional Support domain had richer vocabulary, had better speech understanding and knew more letters, than children from low-scored groups. The level of emotional support did not have a statistically significant impact on language development.

Hamre B. and colleagues showed that the quality of the instructional and emotional support provided by the teacher influences the development of children from risk groups more than the development of children who are not at risk (Hamre, et al., 2005). Researchers identified two types of risks: demographic, associated with the social and economic status of the family, and functional, including behavioral and communicational difficulties, as well as low cognitive motivation. The sampling included 910 children (ages 5 and 6) with children from risk groups involved. The children were tested in terms of psychology, including vocabulary assessment, speech understanding and letter knowledge. A year later children from risk groups who had experience of qualitative instructional and emotional support demonstrated results commensurate with the results of peers who did not have development risks. Thus, children who had the results of language development significantly inferior to that of their peers, managed to overcome these differences for a year of regular attendance of groups with a high level of interactional quality. Later Hamre B. and colleagues again conducted a study of the relationship between the quality of interaction processes in the kindergarten group and the development of preschool (Hamre, et al., 2014). The sampling included 1407 children, ages 4 to 5. language development was assessed twice- at the beginning and at the end of the school year. It included vocabulary assessment, letter knowledge and phonological hearing, as well as primary reading skills. The Instructional Support domain proved to be a statistically significant predictor of increment in letter knowledge. A statistically significant contribution of the remaining indicators to language development was not detected.

Finnish researchers, headed by Silinskas G., studied the relationship between teacher-child interaction and the development of children's reading skills (Silinskas, et al., 2017). The sampling included 1029 children, age 5 to 7. The researchers found out, that the Emotional Support and Classroom Organization domains had a significant impact on the formation of letter knowledge. The connection between the Instructional Support domain and the development of reading skills was not detected. In another study, Pakarinen E. and colleagues analyzed the language development in 515 kindergarteners with different levels of the process quality of the educational environment (Pakarinen, et al., 2017). The children were 6 to 7 years old. All of them were diagnosed with phonemic hearing and letter knowledge. It turned out that the quality of emotional support and classroom organization has a positive relationship with the letter knowledge. The observed association was stronger in a group of children who initially had difficulty with naming letters than a group that did not encounter such difficulties.

The Chinese researcher Hu Y. and his colleagues analyzed the relationship between the cognitive development of children and the process quality of the environment (Hu, et al., 2016) 589 children, age 5 to 6 participated in the research. All of them were diagnosed with vocabulary test. The strongest statistically significant relationship was found between the vocabulary and the Methodical Support domain, then in descending order with the Emotional Support and Classroom Organization domains.

Hatfield B. and colleagues analyzed the relationship between the process quality of the educational environment and school readiness (Hatfield, et al., 2016). The sampling included 875 children, age 3 to 4. Vocabulary, speech perception and understanding and letter/number knowledge were assessed. The study showed that the score according to the Classroom Organization domain is associated with the development of children's writing skills and speech understanding.

M. Burchinal and colleagues studied the influence of the Methodical Support domain on the mental development of children (Burchinal, et al., 2009). The sampling included children from 240 kindergarten groups, ages 4 to 6. A positive relationship was found between the quality of instructional support and speech understanding, expressive speech and letter knowledge.

## 7. Conclusion

Review of the above-described works provides the answer to research questions of the review. The first problem to be solved concerned the influence of the level of the process quality of the educational environment on children's language development. According to the results of large-scale longitudinal studies, children who had experience of long-term attendance of groups with high process quality of the environment noticeably outnumber children who attended groups with a low level of process quality of the environment. A number of studies showed that children from groups with a high level of process quality have a larger vocabulary (Howes, et al., 2008; Hamre, et al., 2005; Pakarinen, et al., 2017; Hu, et al., 2016); are more successful in recognizing and naming the (Burchinal, et al., 2009), (Aikens, et al., 2012; Hamre, et al., 2005); understand speech better (Mashburn, et al., 2008); show more profound writing skills (Hatfield, et al., 2016; Guo, et al., 2014) if compared with children from groups with the low process quality.

The second research issue of the review concerned variations of influence of the process quality of the environment on language development, depending on the social, economic and individual psychological characteristics of children. According to the results of the research, the size of the effect is not the same for children entering kindergarten with initial differences in the social and economic status of the family, the presence of behavioral and communicative difficulties, the availability of cognitive motivation and the degree of children's involvement in the educational process (Hamre, et al., 2005; Pakarinen, et al., 2017).

We believe that a possible explanation for more intensive language development in children attending groups with high indicators of the process quality of the educational environment is a more intensive expansion of the zone of proximal development by the teacher (Vygotsky, 1978). Probably, due to the organization of the positive processes of the group interaction by the teacher (high score according to the Emotional Support domain, the CLASS™), the children feel secure and confidence, join with interest in the discussion of various issues and tasks. The teacher stimulates the development of mental skills in children, promotes the establishment of positive contacts of the child with other children, encourages the reasoning of children and creates situations that require a joint discussion group (high score on the

Instructional Support scale, the CLASS™). The use of such working methods stimulates a more intensive language development in preschool children. Children in groups with a high level of process quality gain experience in formulating and expressing their own ideas, which is much less common in groups with a low level of process quality.

In the end, we want to note that the use of the CLASS™ tool in studies of the relation of process quality and language development of preschool children appears to be very effective for obtaining information on the quality of teacher-child interaction in view of the sufficient consistency of research results. Thus, the CLASS™ tool is a promising technique that meets the logic of the cultural and historical approach and can be useful for researchers of the quality of the educational environment in the Russian sampling.

## Acknowledgments

The work was supported by the grant RFBR № 17-29-09112

## References

- Aikens, N, Moiduddin, E, Xue, Y, Tarullo, L, & West J. (2012). Data tables for child outcomes and classroom quality in FACES 2009 report. *OPRE report 2012-37b* (pp. 1-200). Washington, DC: Administration for Children and Families.
- Bowlby, J. (1969). Attachment and loss, Vol. 1: *Attachment. Vol. 1*. New York: Basic Books.
- Bronfenbrenner, U. (1986). Ecology of the family as a context for human development: research perspectives. *Dev Psychol.*; 22, 723-742.
- Burchinal, P, Kainz, K, Cai, K, Tout, K, Zaslow, M, Martinez-Beck I, et al. (2009). Early care and education quality and child outcomes. *Washington, DC, US: Child Trends*; Available from: [http://www.acf.hhs.gov/sites/default/files/opre/early\\_ed\\_qual.pdf](http://www.acf.hhs.gov/sites/default/files/opre/early_ed_qual.pdf).
- Burchinal, M., Vandergrift, N., Pianta, R., & Mashburn, A. (2010). Threshold analysis of association between child care quality and child outcomes for low-income children in pre-kindergarten programs. *Early Childhood Research Quarterly*, 25(2), 166–176.
- Carrow-Woolfolk, E. (1995). *Oral and Written Language Scales (Owls)*. Circle Pines, MN: American Guidance Service.
- Catts, H.W., Adlof, S.M. & Weismer, S.E. (2006). Language deficits in poor comprehenders: A case for the simple view of reading. *Journal of Speech, Language, and Hearing Research*, 49(2), 278–293.
- Dotterer, A.M., Burchinal, M., Bryant, D., Early, D., & Pianta R. (2013) Universal and targeted pre-kindergarten programmes: a comparison of classroom characteristics and child outcomes. *Early Child Development and Care*, 183(7), 931-950, DOI: 10.1080/03004430.2012.698388
- Dunn, L. M., & Dunn, L. M. (1997). *Peabody Picture Vocabulary Test III*. Circle Pines, MN: American Guidance Service.
- Guo, Y, Tompkins, V, Justice, L, & Petscher, Y. (2014). Classroom age composition and vocabulary development among at-risk preschoolers. *Early Educ Dev.*; 25, 1016-1034. doi: 10.1080/10409289.2014.893759
- Guo, Y., Piasta, S., Justice, L., & Kaderavek, J. (2010). Relations among preschool teachers' self-efficacy, classroom quality, and children's language and literacy gains. *Teaching and Teacher Education*, 26, 1094–1103.
- Hamre B, Hatfield B, Pianta R, Jamil F. (2014) Evidence for general and domain-specific elements of teacher-child interactions: associations with preschool children's development. *Child Dev.*; 85, 1257-1274. doi: 10.1111/cdev.12184 PMID: 24255933
- Hamre, B. & Pianta, R. (2005). Can Instructional and Emotional Support in the First-Grade Classroom Make a Difference for Children at Risk of School Failure? *Child Development*, 76(5), 949 – 967.

- Hatfield, B. E., Burchinal, M. R., Pianta, R. C., & Sideris, J. (2016). Thresholds in the association between quality of teacher–child interactions and preschool children’s school readiness skills. *Early Childhood Research Quarterly*, *36*, 561–571. doi:10.1016/j.ecresq.2015.09.005
- Howes, C., Burchinal, M., Pianta, R., Bryant, D., Early, D., Clifford R, et al. (2008). Ready to learn? children's pre-academic achievement in pre-kindergarten programs. *Early Child Res Q.*, *23*, 27-50.
- Hu, Y., Zhoua, Y., Chen, L., Fana, X., & Winsler, A. (2016). Predictors of Chinese early childhood program quality: Implications for policies, *Children and Youth Services*, *70*, 152-162.
- Justice, L. M., & Piasta, S. (2011). Developing children’s print knowledge through adult-child storybook reading interactions: Print referencing as an instructional practice. In S. B. Neuman and D. K. Dickinson (Eds.), *Handbook of early literacy research* (Vol. 3, pp. 200). New York: Guilford Press.
- Lonigan, C. J., Wagner, R. K., Torgesen, J. K., & Rashotte, C. A. (2007). *Test of Preschool Early Literacy (TOPEL)*. Austin, TX: Pro-Ed.
- Mashburn, A, Pianta, R, Hamre, B, Downer, J, Barbarin, O, Bryant, D, et al. (2008). Measures of classroom quality in prekindergarten and children's development of academic, language, and social skills. *Child Dev.*, *79*, 732-749. doi: 10.1111/j.1467-8624.2008.01154.x PMID: 18489424
- NICHD Early Child Care Research Network. (2005). Pathways to reading: The role of oral language in the transition to reading. *Developmental Psychology*, *4*(2), 428–442.
- Pakarinen, E., Lerkkanen, M., Poikkeus, A., Rasku-Puttonen, H., Eskelä-Haapanen, S., Siekkinen, M. & Nurmi J. (2017). Associations Among Teacher–Child Interactions, Teacher Curriculum Emphases, and Reading Skills in Grade 1, *Early Education and Development*, *28*:7, 858-879, DOI: 10.1080/10409289.2017.1289768
- Peisner-Feinberg, E. S., Burchinal, M. R., Clifford, R. M., Culkin, M. L., Howes, C., Kagan, S. L., & Yazejian, N. (2001). The relation of preschool child-care quality to children's cognitive and social development trajectories through second grade. *Child Development*, *72*, 1534-1553.
- Pianta, R. C., La Paro, K. M., & Hamre, B. K. (2008). *Classroom Assessment Scoring System [CLASS] manual: Pre-k*. Baltimore, MD: Paul H. Brookes. Press.
- Silinskas, G., Pakarinen, E., Lerkkanen, M-K., Poikkeus, A-M., Nurmi, J-E. (2017). Classroom Interaction and Literacy Activities in Kindergarten: Longitudinal Links to Grade 1 Readers at Risk and not at Risk of Reading Difficulties, *Contemporary Educational Psychology*. Available from: <http://dx.doi.org/10.1016/j.cedpsych.2017.09.002>
- Torppa, M., Tolvanen, A., Poikkeus, A. M., Eklund, K., Lerkkanen, M. K., Leskinen, E., & Lyytinen, H. (2007). Reading development subtypes and their early characteristics. *Annals of dyslexia*, *57*, 3–32.
- Vasilyeva, M. & Waterfall, H. (2011). Variability in language development: Relation to socioeconomic status and environmental input. In S. B. Neuman and D. K. Dickinson (Eds.), *Handbook of early literacy research* (Vol. 3, pp. 37). New York: Guilford Press.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes* (M. Cole, V. John-Steiner, S., Scribner, & E. Souberman, Eds.). Cambridge, MA: Harvard University
- Woodcock, R. W., McGrew, K. S., & Mather, N. (2001). *Woodcock-Johnson IV: Tests of Achievement*. Itasca, IL: Riverside Publishing Co.